

Starting up

- Do you think an artificial diamond has the same value as a natural diamond, even if they are identical in every way? Explain your answer.

Vocabulary 1 – pollution and the environment

Choose the best definition (a-i) for the words in bold (1-9). The first one has been done as an example.

- 1 *Coal is not a **sustainable** power source.* **g**
 - 2 Many industries produce harmful **emissions**.
 - 3 We need to reduce the amount of **greenhouse gases** we put into the atmosphere.
 - 4 Some companies make claims about their **ecological** impact, but don't prove them.
 - 5 Planting trees is **eco-friendly**.
 - 6 Factories rely on **the grid** for their power.
 - 7 Wind and solar are both **renewable** power sources.
 - 8 To slow global warming, people and businesses need to become **carbon neutral**.
 - 9 This product is completely **vegan**.
-
- a (adj) connected with the way plants, animals, and people are related to each other and to their environment
 - b (n) a gas, especially carbon dioxide or methane, that is thought to trap heat above the Earth and cause the greenhouse effect
 - c (adj) not harmful to the environment
 - d (n) a gas or other substance that is sent into the air
 - e (adj) a type of energy that replaces itself naturally, or is easily replaced because there is a large supply of it
 - f (n) the network of electricity supply wires that connects power stations and provides electricity to buildings in an area
 - g (adj) able to continue without causing damage to the environment ✓
 - h (adj) not containing any animal products or causing harm to animals
 - i (adj) taking the same amount of carbon dioxide out of the air, for example by planting trees, as is produced

Diamond miners defend green credentials against lab-grown rivals

The global diamond industry has launched a defence of its environmental credentials, claiming that it produces less harmful emissions than those from laboratory-grown diamond rivals.

A study paid for by the Diamond Producers Association, which includes De Beers, Rio Tinto and Russia's Alrosa, said conventional diamond mining produced three times less greenhouse gases than lab-grown production.

The study by Trucost, a unit of S&P Global, estimated that lab-grown diamonds required an estimated 51kg of CO₂ equivalent in their production per ¹**polished carat**, compared with 160kg of CO₂ equivalent for mined diamonds.

The data "calls into question the ²**unsubstantiated** ecological claims by this [lab-grown] industry", said Jean-Marc Lieberherr, chief executive of the DPA.

The study is the latest effort by diamond miners to counter the growing threat of lab-grown diamonds, which are chemically identical to natural diamonds and becoming ever cheaper to produce in larger sizes.

Celebrities including Meghan Markle have promoted them and jewellers such as Swarovski have launched their own lab-grown products.

Many lab-grown diamond producers have marketed themselves as more environmentally friendly than mined diamonds. San Francisco-based Ada Diamonds said on its website that its diamonds were "sustainable, vegan and eco-friendly".

Commenting on the study, Jason Payne, chief executive of Ada Diamonds, said: "It's an all-out PR effort to do everything they [the miners] can to slow adoption of lab-grown diamond gemstones in order to survive. Lab-grown diamonds are ³**an existential threat** to the diamond mining industry and that's a good thing."

While sales of lab-grown diamonds make up only about 2 per cent of the total market, production is increasing by 15 to 20 per cent a year, according to consultancy Bain.

Lab-grown diamonds are produced from ⁴**a carbon seed** using two processes: either via extremely high pressure and high temperature, known as HPHT, or by layering carbon from gases using a microwave plasma oven, known as chemical vapour deposition, or CVD. CVD reactors often require temperatures of more than 1,000C.

Many lab-grown producers are private companies and there is increased production in China and India, where polluting coal-fired power is a big part of the electricity grid, according to Paul Zimmisky, a diamond analyst in New York.

Ada Diamonds' Mr Payne said that lab-grown diamond producers were increasingly using renewable sources of energy for production, something that was not possible for remote mining sites.

San Francisco-based Diamond Foundry, a lab-grown diamond producer backed by actor Leonardo DiCaprio, said it was the world's first diamond producer to be certified as 100 per cent carbon neutral.

However, lab-grown diamond producers have come under growing ⁵**scrutiny** this year. Last month the US Federal Trade Commission warned producers that they could be fined and face ⁶**penalties** if they did not state clearly how their stones were made.



Reading 1

True or false, according to the article?

- 1 Both traditional diamond miners and producers of lab-grown diamonds claim that their own product is less harmful to the environment.
- 2 Lab-grown diamonds have a different chemical structure from natural diamonds.
- 3 Companies that sell natural diamonds have been actively advertising their products as eco-friendly.
- 4 Producing lab-grown diamonds requires a lot of electricity.

Vocabulary 2 – vocabulary in context

Choose the correct meaning of the bold words in the article.

- | | |
|-----------------------------|--------------------------------|
| 1 a) weight when sold | b) worker |
| 2 a) false | b) not proven |
| 3 a) thing that may destroy | b) a source of competition for |
| 4 a) a type of plant | b) a tiny piece of carbon |
| 5 a) careful examination | b) protest |
| 6 a) questions | b) punishment |

Reading 2

Choose the best word or phrase to complete each sentence.

- 1 The study by Trucost was paid for by
a) diamond-making companies c) jewellery producers
b) diamond-mining companies
- 2 The study found that traditional diamond mining is lab-grown diamond production.
a) three times more polluting than c) more eco-friendly than
b) not threatened by
- 3 Jason Payne believes the report is driven by
a) business competition c) public interest
b) science
- 4 The sale of lab-grown diamonds is increasing
a) by about 2% annually c) steadily
b) very slowly

- 5 Lab-grown diamonds may harm the environment because of the needed for the process may cause pollution.
- a) energy c) plasma
- b) chemicals
- 6 Diamond Foundry's production doesn't contribute to
- a) competition for miners c) sales of lab-grown diamonds
- b) an increase in CO₂ in the atmosphere

Grammar 1 – noun phrases to replace verb phrases

Complete the table.

| Verb | Noun |
|----------|----------------------|
| adopt | 1 |
| defend | 2 |
| 3 | deposit, deposition |
| emit | 4 |
| 5 | estimate, estimation |
| increase | 6 |
| launch | 7 |
| 8 | product, production |
| promote | 9 |
| rival | 10 |
| 11 | sale, sales |
| threaten | 12 |

Grammar 2 – noun phrases to replace verb phrases

Write sentences with noun phrases using the noun form of the verb in bold.

- 1 When lab-grown diamonds **are produced**, it uses a lot of energy.

Lab-grown diamond production uses a lot of energy.

- 2 Diamond producers **promote** their products with ecological claims.

- 3 Miners are worried because lab-grown diamonds **compete** with natural diamonds.

- 4 Coal-fired power plants **emit** pollution that's a serious problem.

- 5 Lab-grown diamond producers **sell** more diamonds every year.

Further discussion

Do you think the production of artificial diamonds is a good thing, or a bad thing? Explain your answer.

Group work

Work together to answer these questions.

- 1 Jason Payne says, "Lab-grown diamonds are an existential threat to the diamond mining industry and that's a good thing." Do you agree with him? Why or why not?
- 2 If scientists were able to produce coal in a process similar to producing diamonds, would that be good or bad? Explain your answer.
- 3 If you were buying a diamond, would you choose a natural one, or a lab-grown one? Explain your answer.

ANSWER KEY**Vocabulary 1**

- | | |
|-----|-----|
| 1 g | 6 f |
| 2 b | 7 e |
| 3 a | 8 i |
| 4 d | 9 h |
| 5 c | |

Reading 1

- | | |
|-----|-----|
| 1 T | 3 F |
| 2 F | 4 T |

Vocabulary 2

- | | |
|-----|-----|
| 1 a | 4 a |
| 2 b | 5 a |
| 3 a | 6 b |

Reading 2

- | | |
|-----|-----|
| 1 b | 4 c |
| 2 c | 5 a |
| 3 a | 6 b |

Grammar 1

- | | |
|--------------|-------------|
| 1 adoption | 7 launch |
| 2 defence | 8 produce |
| 3 deposition | 9 promotion |
| 4 emission | 10 rival |
| 5 estimate | 11 sell |
| 6 increase | 12 threat |

Grammar 2 (Suggested answers)

- 2 The promotion of lab-grown diamonds includes ecological claims.
- 3 Competition from lab-grown diamonds worries miners.
- 4 Emissions from coal-fired power plants are a serious problem.
- 5 Sales of lab-grown diamonds are increasing every year.

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